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EXAMINER	
HANNETT, JAMES M	
ART UNIT	**PAPER NUMBER**
2612	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/726,773	ACHARYA ET AL.	
	Examiner	Art Unit	
	James M Hannett	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *35-38* is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☒ Claim(s) *33 and 34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 10/12/2004 have been fully considered but they are not persuasive.

The applicant argues that nowhere does Prentice disclose at least performing operations on image data produces in an imaging device. The applicant argues that Prentice merely discloses storing of image data in a ram memory and then transferring the stored image data to a host computer.

The examiner disagrees with the applicants arguments. The examiner points out that in Claims 1 and 9 the claims are written broadly and merely state that performing operations on the image data in the imaging device to obtain uncompressed processed image data. Prentice teaches on Paragraph [0021] and depicts a in Figure 1 that within the digital camera the image data is subjected to Gain and Correlated double sampling processing (24) this is viewed by the examiner as processing the data in the imaging device. Furthermore, nowhere does Prentice teach that image compression is performed in the imaging device. Prentice actually teaches on Paragraph [0043] that compression is performed in the computer.

Applicant's arguments filed 10/12/2004 have been fully considered but they are not persuasive. The examiner rejected Claims 2-6, 16-22, 25-30 and 32 under Prentice in view of official notice. The examiner has provided a reference in regard to the official notice.

The applicant arguments pertaining to claim 26 is not persuasive, the applicant argues that nowhere does Prentice teach or suggest software to perform color interpolation in either of

two processor based systems and that instead only color interpolation is performed in the host computer.

The examiner points out that this claim is written in the alternative. Therefore the examiner reads the claim to only have to allow the interpolation to be performed in either the camera or the computer. Furthermore, Prentice teaches that the interpolation is performed in the computer.

Applicant's arguments, see the amendment, filed 10/12/2004, with respect to the rejection(s)of claim(s) 7, 8, 23, 24 and 31 under Prentice in view of Acharya have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of USPN 6,526,181 Smith et al. Due to the new grounds of rejection this action is made non-final

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1: Claims 1 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2003/0030729 Prentice et al.

2: As for Claim 1, Prentice et al teaches on Paragraph [0020 and 0022] a method comprising: producing image data in an imaging device (22 and 30) coupled to a processor-based system (12) by a serial bus (42); performing operations on the image data in the imaging device

(gain control and CDS) to produce uncompressed image data; and transferring the image data to the processor-based system through the serial bus.

3: As for Claim 9, Prentice et al teaches on Paragraph [0028] performing operations on the image data in the processor-based system. The operations are viewed be the examiner as the CDS and Gain control. Prentice teaches on Paragraph [0043] that compression is performed in the computer not the imaging device.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4: Claims 2-5, 27-30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0030729 Prentice et al in view of US 2004/0105016 Sasaki.

5: In regards to Claim 2, Prentice et al teaches on Paragraph [0029-0030] performing operations on the image data further comprising: performing dead pixel substitution on the image data. However, Prentice et al teaches that the image processing to perform dead pixel substitution is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of dead pixel substitution in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

6: As for Claim 3, Prentice et al teaches on Paragraph [0021] performing dark current subtraction on the image data. However, Prentice et al teaches that the image processing to perform dark current subtraction is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of dark current subtraction in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

7: In regards to Claim 4, Prentice et al teaches on Paragraph [0028] quantizing the image data. However, Prentice et al teaches that the image processing to perform quantizing is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of quantizing in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

8: As for Claim 5, Prentice et al teaches on Paragraph [0041] performing contrast enhancement on the image data. However, Prentice et al teaches that the image processing to perform contrast enhancement is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of contrast enhancement in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

9: As for Claim 27, Prentice et al teaches on Paragraph [0029-0030] performing operations on the image data further comprising: performing dead pixel substitution on the image data. However, Prentice et al teaches that the image processing to perform dead pixel substitution is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of dead pixel substitution in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

10: In regards to Claim 28, Prentice et al teaches on Paragraph [0021] performing dark current subtraction on the image data. However, Prentice et al teaches that the image processing to perform dark current subtraction is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of dark current subtraction in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

11: As for Claim 29, Prentice et al teaches on Paragraph [0028] quantizing the image data. However, Prentice et al teaches that the image processing to perform quantizing is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of quantizing in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

12: In regards to Claim 30, Prentice et al teaches on Paragraph [0041] performing contrast enhancement on the image data. However, Prentice et al teaches that the image processing to perform contrast enhancement is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of contrast enhancement in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

13: In regards to Claim 32, Claim 32 is rejected for reasons discussed related to claim 26.

14: Claims 16-22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0030729 Prentice et al.

15: In regards to Claim 16, Prentice et al teaches on Paragraph [0020 and 0022] and depicts in Figure 1 an imaging device comprising: a sensor to receive incident light and produce image data (20); and an interface (42) to connect the imaging device to a processor-based system (12), wherein the imaging device (22 and 30) sends uncompressed image data to the processor-based system (12) using a serial bus (42). Prentice teaches on Paragraph [0021] and depicts a in Figure 1 that within the digital camera the image data is subjected to Gain and Correlated double sampling processing (24) this is viewed by the examiner as processing the data in the imaging device. Prentice et al teaches on Paragraph [0020] transferring the image data to the processor-based system (12) through the serial bus (42) further comprising transmitting the image data over a bus that is compliant with a universal serial bus, revision 1.0, specification. However, Prentice et al does not teach that a USB connection that is compliant with a universal serial bus, revision 2.0, specification can be used.

Official notice is taken that it was well know in the art at the time the invention was made to use USB connection that is compliant with a universal serial bus, revision 2.0 in place of the older USB connections in order to improve transition speed. Furthermore, it was well known in the art at the time the invention was made that universal serial bus, revision 2.0 transmits at a rate higher than twelve million bits per second.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the USB connection of Prentice et al with the newer USB connection compliant with a universal serial bus, revision 2.0 order to improve transition speed.

16: As for Claim 17, Claim 17 is rejected for reasons discussed related to Claim 16.

17: In regards to Claim 18, Prentice et al teaches on Paragraph [0019] a software program to operate on the uncompressed image data.

18: As for Claim 19, Prentice et al teaches on Paragraph [0029-0030] a read only memory wherein the software program performs dead pixel substitution on the uncompressed image data using the read-only memory.

19: In regards to Claim 20, Prentice et al teaches on Paragraph [0028] the software program performs dark current subtraction on the uncompressed image data using the read-only memory.

20: As for Claim 21, Prentice et al teaches on Paragraph [0040-0041] further comprising a look-up table, wherein the software program uses the look-up table to quantize the uncompressed image data.

21: In regards to Claim 22, Prentice et al teaches on Paragraph [0040-0041] the software program performs contrast enhancement on the uncompressed image data using the look-up table.

22: As for Claim 25, Prentice et al teaches on Paragraph [0020 and 0022] an article comprising a medium for storing a software program to enable a processor-based system (12) to: produce image data; perform operations on the image data, wherein the operations do not include compression; and transfer the image data to a second processor-based system through a serial bus (42), revision 1.0, specification. Prentice teaches on Paragraph [0021] and depicts a in Figure 1 that within the digital camera the image data is subjected to Gain and Correlated double sampling processing (24) this is viewed by the examiner as processing the data in the imaging

device. However, Prentice et al does not teach that a USB connection that is compliant with a universal serial bus, revision 2.0, specification can be used.

Official notice is taken that it was well know in the art at the time the invention was made to use USB connection that is compliant with a universal serial bus, revision 2.0 in place of the older USB connections in order to improve transition speed. Furthermore, it was well known in the art at the time the invention was made that universal serial bus, revision 2.0 transmits at a rate higher than twelve million bits per second.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the USB connection of Prentice et al with the newer USB connection compliant with a universal serial bus, revision 2.0 order to improve transition speed.

23: In regards to Claim 26, Prentice et al teaches on Paragraph [0037] storing the software program to enable the processor-based system to further: optionally perform color interpolation in the second processor-based system (12).

24: Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0030729 Prentice et al in view of US 2004/0105016 Sasaki in further view of USPN 6,526,181 Smith et al.

25: In regards to Claim 6, Prentice et al teaches on Paragraph [0030] performing color interpolation on the image data. However, Prentice et al teaches that the image processing to perform color interpolation is performed in the computer and not in the camera.

Sasaki teaches on Paragraphs [0097 and 0105-0106] and depicts in Figures 1 and 3 that it is advantageous to allow a digital camera to perform many image processing routines. This method is advantageous because it allows the user to perform a variety of image processing

routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the image processing technique of scaled color interpolation in the camera of Prentice et al instead of the computer as taught by Sasaki, in order to allows the user to perform a variety of image processing routines without the use of a personal computer. Therefore, the image quality can be improved regardless of the capabilities of the computer connected to the camera.

Prentice in view of Sasaki teaches the method of performing color interpolation in a digital camera. However, Prentice in view of Sasaki does not teach that the interpolation can be scaled color interpolation.

Smith et al teaches on Column 2, Lines 37-43 and Column 6, Line 62- Column 7, Line 17 and depicts in Figure 5 that it is advantageous when averaging the two green pixels in an image sensor where performing color interpolation to add weighting factors to perform scaled interpolation. Smith et al teaches that this method is advantageous because it can help eliminate image sensor line noise and therefore, improve image quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the scaled color interpolation as taught by smith et al in the camera as taught by Prentice in view of Sasaki in order to help eliminate image sensor line noise and improve image quality.

26: Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0030729 Prentice et al in view of US 2004/0105016 Sasaki in further view of USPN 6,526,181 Smith et al in further view of USPN 6,269,181 Acharya.

27: As for Claim 7, Prentice et al teaches in Paragraph [0021] the use of a camera system that uses an image sensor (20) with pixels arranged in a Bayer arrangement. Prentice et al further teaches in Paragraph [0028] that the pixels output from the image sensor in a Bayer arrangement are converted to an RGB color format for image processing. However, Prentice et al is silent as to the details of the conversion of the raw pixel data in the Bayer arrangement to the RGB color data. And does not teach the method of identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component.

Acharya teaches on Column 3, Lines 34-Column 4, Lines 1-20 identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component. Acharya teaches that this method is advantageous for RGB color signal formation because it improves image quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the color interpolation method of Acharya to convert the raw data from the image sensor having the Bayer arrangement in Prentice et al to an RGB color format in order to improve image quality.

28: In regards to Claim 8, Prentice et al teaches in Paragraph [0021] the use of a camera system that uses an image sensor (20) with pixels arranged in a Bayer arrangement. Prentice et al

further teaches in Paragraph [0028] that the pixels output from the image sensor in a Bayer arrangement are converted to an RGB color format for image processing. However, Prentice et al is silent as to the details of the conversion of the raw pixel data in the Bayer arrangement to to the RGB color data. And does not teach the method of identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component.

Acharya teaches on Column 3, Lines 34-Column 4, Lines 1-20 identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component. Acharya teaches that this method is advantageous for RGB color signal formation because it improves image quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the color interpolation method of Acharya to convert the raw data from the image sensor having the Bayer arrangement in Prentice et al to an RGB color format in order to improve image quality.

29: Claims 23, 24, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0030729 Prentice et al in view of USPN 6,269,181 Acharya.

30: As for Claim 23, Prentice et al teaches in Paragraph [0021] the use of a camera system that uses an image sensor (20) with pixels arranged in a Bayer arrangement. Prentice et al further teaches in Paragraph [0028] that the pixels output from the image sensor in a Bayer arrangement are converted to an RGB color format for image processing. However, Prentice et al is silent as to the details of the conversion of the raw pixel data in the Bayer arrangement to to the RGB

color data. And does not teach the method of identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component.

Acharya teaches on Column 3, Lines 34-Column 4, Lines 1-20 identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component. Acharya teaches that this method is advantageous for RGB color signal formation because it improves image quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the color interpolation method of Acharya to convert the raw data from the image sensor having the Bayer arrangement in Prentice et al to an RGB color format in order to improve image quality.

31: In regards to Claim 24, Prentice et al teaches in Paragraph [0021] the use of a camera system that uses an image sensor (20) with pixels arranged in a Bayer arrangement. Prentice et al further teaches in Paragraph [0028] that the pixels output from the image sensor in a Bayer arrangement are converted to an RGB color format for image processing. However, Prentice et al is silent as to the details of the conversion of the raw pixel data in the Bayer arrangement to to the RGB color data. And does not teach the method of identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component.

Acharya teaches on Column 3, Lines 34-Column 4, Lines 1-20 identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the

sub-block; and averaging the pair of green components to produce a new green component. Acharya teaches that this method is advantageous for RGB color signal formation because it improves image quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the color interpolation method of Acharya to convert the raw data from the image sensor having the Bayer arrangement in Prentice et al to an RGB color format in order to improve image quality.

32: As for Claim 31, Prentice et al teaches in Paragraph [0021] the use of a camera system that uses an image sensor (20) with pixels arranged in a Bayer arrangement. Prentice et al further teaches in Paragraph [0028] that the pixels output from the image sensor in a Bayer arrangement are converted to an RGB color format for image processing. However, Prentice et al is silent as to the details of the conversion of the raw pixel data in the Bayer arrangement to the RGB color data. And does not teach the method of identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component.

Acharya teaches on Column 3, Lines 34-Column 4, Lines 1-20 identifying a sub-block of a Bayer pattern sensor in the imaging device; extracting a pair of green components from the sub-block; and averaging the pair of green components to produce a new green component. Acharya teaches that this method is advantageous for RGB color signal formation because it improves image quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the color interpolation method of Acharya to convert the raw data

from the image sensor having the Bayer arrangement in Prentice et al to an RGB color format in order to improve image quality.

Allowable Subject Matter

33: Claims 35-38 are allowed.

34: Claims 33 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach a system in which a camera determines whether or not to perform scaled color interpolation based on the throughput of the uncompressed processed image data. The prior art teaches a method in which in a motion picture mode a subset of the image data will be transmitted in order to increase the speed of transmitting. However, the prior art does not teach color interpolation the data in the camera before sending it to the computer if a determination is made that a greater throughput is needed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 6,091,862 Okisu teaches a pixel interpolation method for a digital camera.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M Hannett whose telephone number is 571-272-7309. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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February 14, 2005

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